

# PATENT ABSTRACTS OF JAPAN

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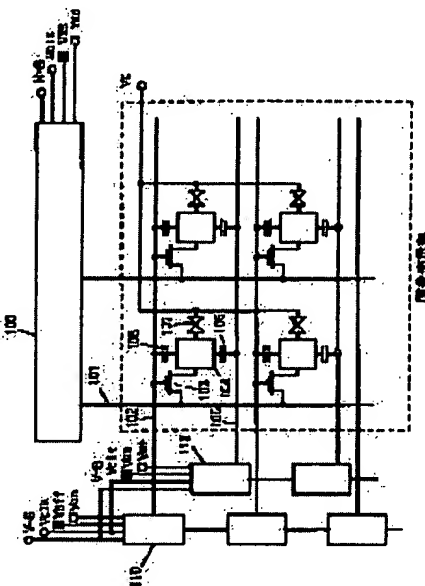
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## (54) LIQUID CRYSTAL DISPLAY DEVICE AND DRIVE METHOD

### (57)Abstract:

**PROBLEM TO BE SOLVED:** To simplify the structure of an output circuit and make the potential of one value variable so that a bright regulation can be realized by synchronizing a common electrode line driving circuit with a scanning line drive circuit, and setting the output binary.

**SOLUTION:** The output of a common electrode line drive circuit 112 is binary, and it is arranged on the same side as a scanning line drive circuit 110. A scanning line waveform  $V_g$  and a signal line waveform  $V_s$  are changed in 1H time unit and repeated in 1V period. This is repeated, whereby an amplitude larger than the signal waveform  $V_s$  can be obtained. Since the common line electrode potential is binary, the positive side and the negative side have the same amplitude, and the common electrode  $V_c$  of a liquid crystal 107 is set lower than the center value of the signal line waveform  $V_s$  by the portion of the slight shift to the negative side according to the Voff change of a scanning line waveform  $V_g$ , whereby the application of DC to the liquid crystal 107 can be prevented, and a problem such as flicker or seizure is never caused. Accordingly, the common electrode line drive circuit 112 can reconcile the increase in picture element electrode potential  $V_d$  and the suppression of the scanning line waveform  $V_g$ .



## LEGAL STATUS

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